

The New Commonwealth Governor's STEM Academy

At Chantilly High School
Fairfax County Public Schools

*Advancing Excellence in
Career & Technical Education
for Virginia's Economic Future*

April 26, 2012 Presentation – Virginia Board of Education

Advancing Virginia's Competitiveness in a Global Economy - Challenges

- **Pipeline** - Too few young people consider the possibility of manufacturing careers and do not know what skills they need to succeed. Similarly, students do not always graduate from high school equipped with the necessary skills or knowledgeable about manufacturing career opportunities.
- **Capacity Building** - Education providers need the curriculum, equipment, qualified instructors and other tools necessary to train the highly-skilled work force that advanced manufacturers need. Educators need to define the specific competencies and implement the career ladder and lattice models that will enable workers to continually enhance their skills.

Source: United States Department of Labor – Employment & Training Administration

Advancing Virginia's Competitiveness in a Global Economy - Challenges

The Northern Virginia Technology Council (NVTC) has elevated Virginia as a Global Technology leader and distinguished Virginia as the best state in the nation for Business.

NVTC's 2012 Legislative Agenda established **Education** as a priority . **"The growth potential for Virginia's technology industry is limited by an insufficient number of qualified technology workers, and the education system is not graduating a sufficient number of people with degrees in math, science, engineering and technology-related fields."**

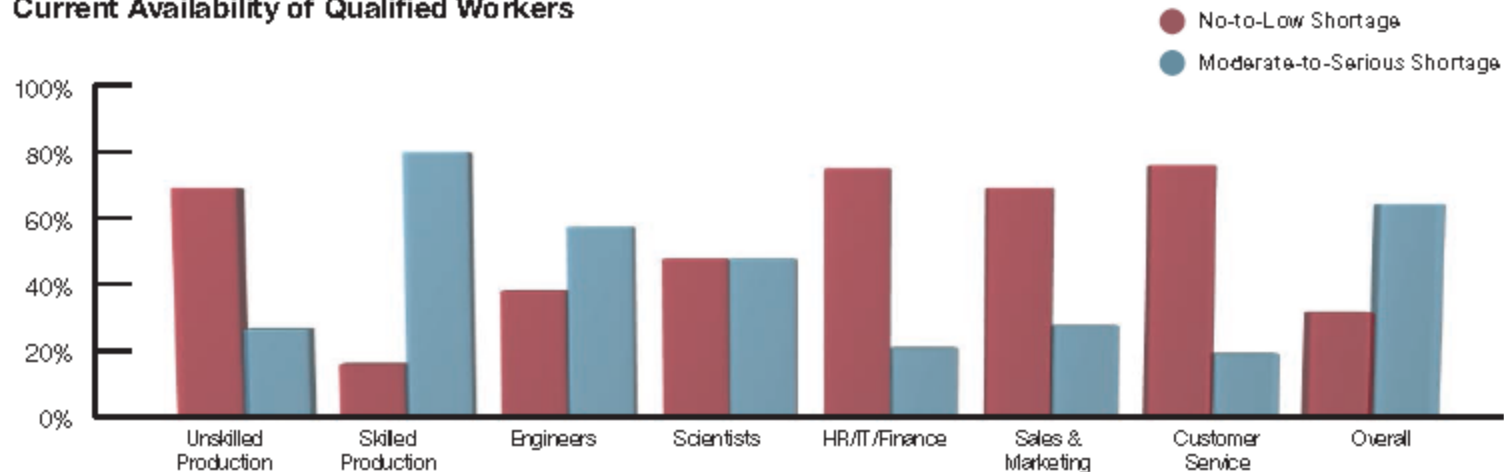
NVTC has called for "... improvements in K-12 STEM education to bolster proficiency in all students and increase the number of high school grads pursuing technology-related certifications and boost the number of college-bound high school grads electing STEM majors."

Boiling Point: The Skills Gap in U. S. Manufacturing

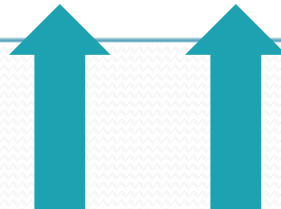
National Manufacturing Institute – 2011

Figure 1.

Current Availability of Qualified Workers



Source: Boiling Point? The Skills Gap in U.S. Manufacturing, Deloitte and The Manufacturing Institute (2011).



National Global Competitiveness: Advancing Innovation & Discovery

- President Obama's "***Educate to Innovate***" campaign targets improvement in the participation and performance of America's students in science, technology, engineering, and mathematics (STEM).
 - Increase STEM literacy so that all students can learn deeply and think critically in science, mathematics, engineering, and technology.
 - Move American students from the middle of the pack to top in the next decade.
 - Expand STEM education and career opportunities for underrepresented groups, including women and girls.

The New Commonwealth Governor's STEM Academy

The New Commonwealth Governor's STEM Academy will prepare our students for high-wage, high-demand and high-skill careers in STEM fields with emphasis on:

- ***Science, Engineering, Technology and Mathematics***
- ***Information Technology***
- ***Workplace Readiness Skills in the Commonwealth (WRS)***
- ***Virginia Career Readiness Certification (CRC)***

Percentage of IT Job Growth 2008-2018

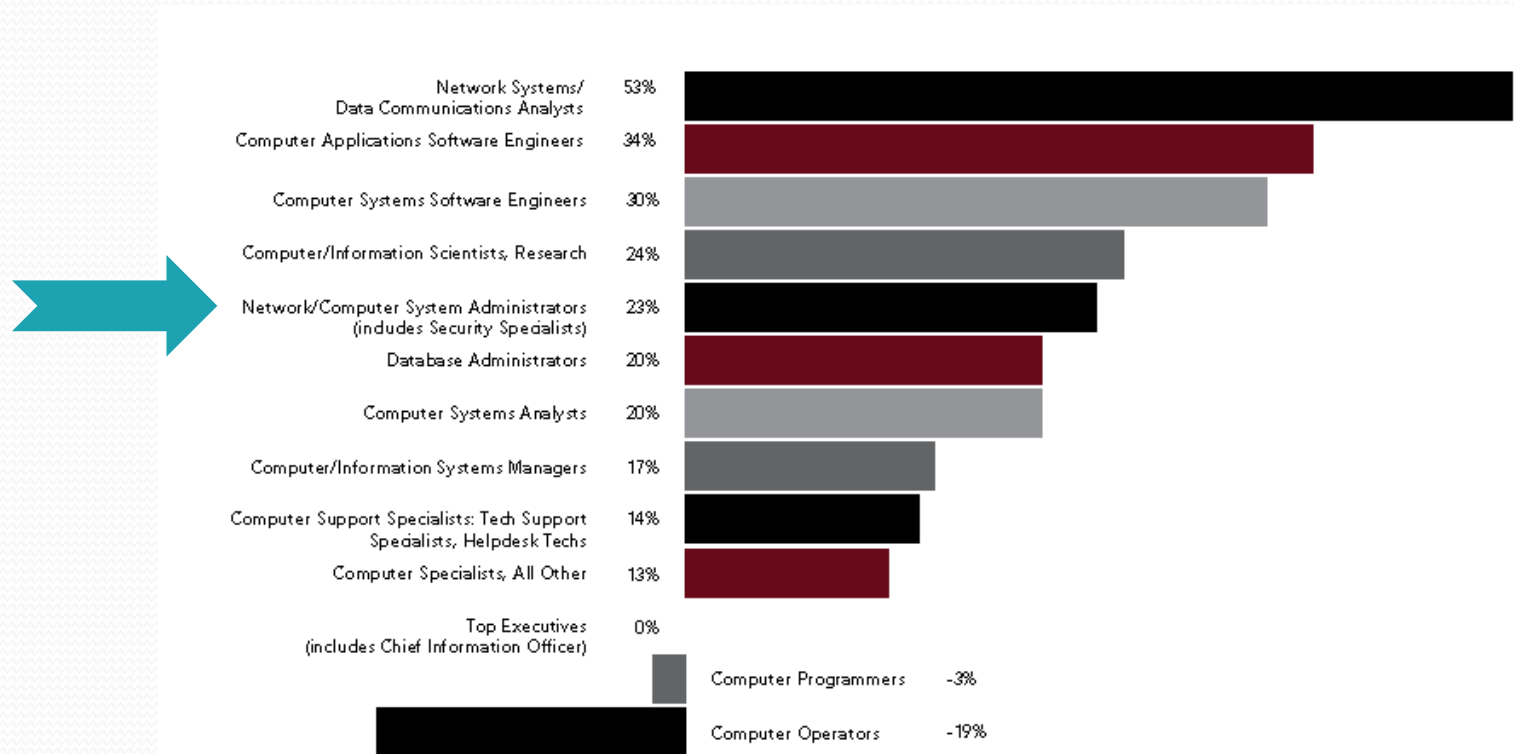


Figure 3.1 Percentage of IT Job Growth from 2008–2018
(Source: U.S. Department of Labor, Bureau of Labor Statistics)



Engineering and Technology - Advanced Manufacturing

YEAR 1

- MTH 163 Precalculus 1 (3 credits)

EGR 115 Engineering Graphics (2 credits)

YEAR 2

- ENG 111 College Composition I (3 credits)

- ENG 112 College Composition II (3 credits)

- ETR 113 DC Fundamentals I (4 credits)

- ETR 106 Basic Programming Applied to
Electrical/Electronic Calculations (2 credits)

Pre-Calc w/ Trig

(FCPS #316000)

Engineering Drawing

(FCPS #843600)

English 12

(FCPS #116000)

English 12

(FCPS #116000)

Electronics 1

(FCPS # 841600)

Electronics 2

(FCPS #841200)

Total Projected Student Enrollment: 180 Students

A total of 17 College Credits in preparation for the AAS in Engineering Technology or an AS in General Studies at NOVA.

CRC Certification required for MSSC or VCATS Certifications.

MSSC **Certified Production Technician** or
VCATS **Manufacturing Technician 1** or **Manufacturing Specialist Certifications.**

Employment Forecasts -

- Engineering and Technology – Advanced Manufacturing
 - *The National Governors Association (NGA)* – “... At a Governor’s Manufacturing Summit in 2011, researchers projected that “**approximately 40 percent of the skilled labor workforce is expected to retire in the next five years**, and the pipeline to replace these workers is inadequate.”
 - In 2010, the **average U.S. manufacturing worker earned \$77,186 annually**, including pay and benefits. The average non-manufacturing worker earned \$56,436 annually. (Source: National Association of Manufacturers)
 - In 2011, the average wage for all occupations in Virginia was \$48,870. The **average wage for occupations in the STEM cluster was \$84,600**. The **average wage for occupations in the IT cluster was even higher, \$94,990**. (Source: U. S. Bureau of Labor Status, 2011)



Information Technology – Network Systems, CyberSecurity

YEAR 1

- MTH 163 Precalculus 1 (3 credits)
- ITN 154 Cisco 1 (4 credits)
- ITN 155 Cisco 2 (4 credits)
- ITE 115 Introduction to Computer Applications & Concepts (3 Cr.)
- ITN 100 – Introduction to Telecommunications (3 Cr.)

YEAR 2

- ENG 111 College Composition I (3 credits)
- ENG 112 College Composition II (3 credits)
- ITN 156 Cisco 3 (4 credits)
- ITN 157 Cisco 4 (4 credits)
- ITN 120 – Wireless Network Administration (3 Cr.)
- ITN 260 – Network Security Basics (3 Cr.)

Total Projected Student Enrollment: 150

A total of 37 College Credits earned toward a Certificate in Information Technology – Cybersecurity, a AAS in Information Technology – Cybersecurity Concentration.

Pre-Calc w/ Trig

(FCPS #316000)

Cisco I – Part A

(FCPS #854232)

Cisco I – Part B

(FCPS #854332)

Information Systems

(FCPS #661200)

Network Administration I

(FCPS #665032)

English 12

(FCPS #116000)

English 12

(FCPS #116000)

Cisco II – Part A

(FCPS # 854432)

Cisco II – Part B

(FCPS # 854532)

Network Administration II

(FCPS #665132)

Network Administration II

(FCPS#665132)



Information Technology – Network Systems, Cybersecurity

Eligible to earn the following industry recognized certifications:

- Workplace Readiness Skills Certification (WRS) *
- Virginia Career Readiness Certification (CRC) *
- IC3
- A+ CompTIA
- CCNA
- ICDN (2 parts) *
- NetPlus *
- MTA *
- Microsoft Office Specialist (MOS), Microsoft Certified Professional (MCP),
- Certified Internet Webmaster (CIW), and
- Begin Preparation for CISSP.

* *New*

Employment Forecasts -

Jim Gosler, a fellow at Sandia National Laboratory, National Security Agency visiting scientist, and the founding director of the CIA's Clandestine Information Technology Office has estimated that ***the United States requires 10,000 to 30,000 people who are highly skilled at cybersecurity but that currently, only about 1,000 are available.***

“The long-term solution is to nurture the next generation of cyber-experts in high schools and universities. That will take time, and meanwhile, there are no easy answers.” Government, Military Face Severe Shortage of Cybersecurity Experts, NDIA Business & Technology Magazine, August 2011.

Preparing Our Graduates for Success

- Virginia's Workplace Readiness Skills in the Commonwealth – WRS
 - Personal Qualities and People Skills
 - Professional Knowledge and Skills
 - Technology Knowledge and Skills
- Virginia Career Readiness Certification – CRC
 - Reading for Information
 - Locating Information
 - Applied Mathematics

Recruitment Initiatives & Admission Guidelines

● *Recruitment*

- Camp CTE – FCPS Counselors
- Open Houses
 - Students & Parents
- Academy Visits
- Career Fairs at Feeder Schools
- Visits with “Feeder Schools” Counselors
- Web site

● *Admissions*

- Common Application
- Student Transcript
- Attendance Record
- Personal Statement
- “Weighted” for Academy Visit
- Application Review Matrix

It will be a Cybersecurity Summer!

CyberSecurity Summer Camp

presented by

Northrop Grumman & Chantilly Academy



Want to learn how to defend against Cyber Attacks?

Leading Northrop Grumman Cyber Experts will share...

Personal Security & Network Security Strategies

CyberSecurity Fundamentals

Info on CyberSecurity Internships & Careers

CyberSecurity Grand Challenge Competition

Date: August 6 – August 10, 2012

Time: 9:00 am – 3:00 pm

Camp Registration Fee - \$150 per Student

(Needs-Based Scholarships are Available)

Location: Chantilly High School

4201 Stringfellow Road, Chantilly, Virginia

Registration Forms @ <http://www.fcps.edu/ChantillyAcademy>

✧ Information is available, call 703.222.7464 or

Email jeozdogan@fcps.edu ✧

Student Profile 2011-2012

Total Number of Students	1,210
Totals by Grade Level	
• 10 th Graders	49
• 11 th Graders	507
• 12 th Graders	653
• Postsecondary	1
Male Students	656 54 percent
Female Students	564 46 percent
Special Education Services	23.8 percent
ESOL Services (Levels 1 – 5)	11.9 percent
Free & Reduced Lunch Eligibility (Self-Reported)	6.3 percent
Dropout Rate SY 2009-2010	
Chantilly High School	0.49 percent
FCPS Division (Grades 7-12)	1.36 percent
Students by Ethnic Classification	
• White	42.9 percent
• Black	9 percent
• Hispanic	23.3 percent
• American Indian	.08 percent
• Asian	19.9 percent
• More than 2 races	4.5 percent
• Hawaiian/Pacific Islander	.08 percent

Academy Staffing – Hiring Practices

- **Policy** - The New Commonwealth Governor's STEM Academy is tied to the procedures outlined by the Human Resources Department of Fairfax County Public Schools to identify, recruit, select, and assign highly qualified faculty members for Academy teaching appointments.
- **Process** - Interviewing panels for faculty positions may include the Coordinator of Career and Technical Education, the Academy Administrator, individual CTE Program Managers, and other faculty/staff.
- **Dual Enrollment** - Selection for teaching appointments will take into consideration the criteria for acceptance by NOVA as an adjunct faculty member to optimize the dual enrollment program at the Academy.

Academy Staffing - Current

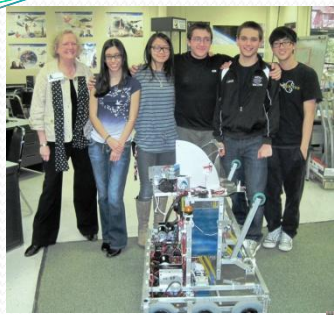
- *A Team of Dedicated Professionals:*
 - Academy Administrator 1.0 FTE
 - Academy Counselor 1.0 FTE
 - Career Experience Specialist 1.0 FTE
 - Academy Finance Technician 1.0 FTE
 - Academy Administrative Assistant 1.0 FTE
 - Support Team –Resource Teachers;
English for Speakers of Other Languages (ESOL),
Special Education Student Services 6.5 FTEs
 - Faculty – 19 Teachers 19 FTEs

“Learning by Doing” – Work-Based Learning

The New Commonwealth Governor’s STEM Academy will be a great place to discover a career...

- A full-time Career Experience Specialist will work closely with Academy faculty, local industry, business, government, and centers of postsecondary and higher education to develop an annual program of high value experiential learning opportunities that foster career exploration and preparation.
 - Internships
 - Independent Research Placements
 - Career Shadow Program
 - Cooperative Learning
 - Academy programs will operate entrepreneurial businesses that provide students opportunities to perform jobs and services for external clients and customers.

Our NCGSA Learning Community



Working with our Partners, we will...

- **Annually validate current course offerings** to prepare students with relevant, high-demand, high-value industry certifications that enable them to be “work-ready” upon graduation, and/or be prepared for postsecondary and higher education after high school graduation.
- **Deliver two new well-articulated career pathways in Engineering Technology and Information Technology/Security** that are coordinated with high school credits, community college, and university credits.
- Assure that **graduates will have earned a minimum of 12 college dual enrollment credits** in two new program areas.
- **Advance Fairfax County as a major proponent of Certified Work Ready Communities** through the adoption of the WRS and CRC certifications.
- Achieve **year over year increases in WRS certifications** by 10 percent beginning in year three.

Working with our Partners, we will...

- In Year Two, (1) **increase the numbers of all Academy programs' seniors participating in CRC certification**; and (2) achieve a pass rate of 45 percent.
- **Increase the number of CTE Diploma Seals** earned by graduating seniors by 10 percent annually beginning in year one.
- Academy administration will **develop baseline drop-out statistics** for all feeder schools, identify “at-risk” students during the recruitment process, and track retention and high school completion rates by school year 2013–2014.
- **Institute a new graduation tracking system** by school year 2014–2015 for all Academy graduating seniors capturing postsecondary plans.
- **Increase the number of Academy students sitting for industry certifications** by 15 percent by year two.
- **Increase the number of Academy students earning industry certifications** year after year by 10 percent in the first three years.

We share a common commitment...



NORTHROP GRUMMAN



A Commitment to Educational Excellence...

The New Commonwealth Governor's STEM Academy will serve as an ***innovator*** and ***incubator of new programs and new educational technologies***. We will be an ***active Ambassador for “the art of the possible”*** in Career & Technical Education that advances STEM education across the Commonwealth of Virginia and our country.